PATENT SPECIFICATION

DRAWINGS ATTACHED

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909,015

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COMPLETE SPECIFICATION

Improvements in apparatus for Blanching, Pre-Cooking or otherwise Treating Peas or Beans

We, MITCHELL ENGINEERING LIMITED, of 1 Bedford Square, London, W.C.1., a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to apparatus for blanching, pre-cooking or otherwise treating peas, beans and the like, hereinafter for convenience termed peas, such apparatus being of the kind comprising a water tube or chamber to which the peas are fed and subsequently extracted.

The present invention has been devised with the general object of providing improved apparatus permitting a more regular flow of hot water around the peas.

The improved apparatus accordingly comprises an inner and an outer concentric perforated tube enclosed by a water chamber and means for directing water outwardly from inside the inner tube, through the space between the tubes in which the peas are treated, and into the outer part of the water chamber.

Preferably the water is directed counter to the direction of feed of the peas to the treatment space between the tubes and the inner perforated tube is fitted with one or more perforated deflectors in order that the peas may be more thoroughly soaked with hot water as they pass from end to end of the treatment space.

The invention will be more completely understood from the following detailed description which is given in conjunction with the accompanying drawings, in which:—

Figures 1 and 2 are sectional front and side views respectively of an apparatus for blanching or pre-cooking peas, constructed in accordance with the invention; and

Figure 3 is a plan view of the perforated ring tube for supplying hot water to the apparatus.

Referring now to these drawings, the water chamber 1, which may be some ten feet in length, is of cylindrical shape with an inverted conical lower end 2, and is supported vertically on a series of upright legs or columns 3 spaced around its periphery. Suspended centrally within the cylindrical part of the container 1 is a large cylindrical tube 4 formed throughout with perforations. Concentrically arranged within this tube 4 is a smaller cylindrical tube 5 also formed throughout with perforations. This inner tube 5 carries centrally and at its lower end a pair of multi-perforated hollow frusto-conical deflectors 6 and 7 which project into the treatment space between the two tubes 4 and 5.

Conveniently the outer tubular member 4 is formed in three parts which slightly overlap one another, and are held or located in position by annular spacer members 19 disposed between the tubular member 4 and the walls of the chamber 1.

Extending from top to bottom through the interior of the inner tube 5 is an extraction pipe 8 the upper end of which is connected to an ejector device including a nozzle 9 through which steam or water is delivered from a supply pipe 10 to create a partial vacuum in the extraction pipe 8 for the purpose of extracting blanched peas from the water chamber and delivering them up a further pipe 11 to a discharge chute.

At the lower end of the inner tube 5 and surrounding the extraction pipe 8 is a tubular ring 12 connected by a pipe 13 to an external hot water pipe and having its top part formed with a large number of water discharge orifices, as shown in Figure 3.

At the bottom of the water chamber 1 is a plug 14 and at one side of this plug is a drain tap 15. At the top of the water chamber 1 at one side is a water overflow pipe 16 and at the other side is an overflow hopper 17 for collecting splits and skins. All parts with which water comes in contact are made of stainless steel or treated in a manner to prevent contamination.

In operation, the peas to be blanched or precooked are continuously fed in any suitable manner into the top of the treatment space 18 between the inner and the outer perforated tubes 4 and 5 which is already partly filled to a predetermined level with hot water. As the first load of peas enter, the water level rises until, when the treatment space is full, the water is at the overflow level. The rate of ejection of the soaked peas is carefully controlled to ensure that the peas are cooked or blanched for a predetermined time by the flow of hot water from the inner tube 5 to the outer tube 4. The flow of hot water is generally at a normal convection gradient from the inner tube 5 through the product to the outer tube 4. The perforated inner tube 5 is furthermore capable of being blanked off at its upper end so as effectively to shorten the pre-cooking time even further than is possible by the control of the ejection rate.

After the peas have passed through the annular space 18 formed by the inner and outer tubes 4 and 5, constantly being soaked with changing hot water which is travelling counter to the peas, they are drawn up the extraction pipe 8 under the influence of the ejector device at the upper end.

In order to conserve the heat of the system and to effect an economy of operation the water at the top of the blancher, which has been partly cooled by the pre-cooking and blanching process, is overflowed through the overflow pipe 16 to a receiving tank at a low level, and still having considerable heat content it is filtered and returned to the water heater and thence back to the blancher where it is introduced through the heater ring 12 in the manner previously described.

It is to be understood however, while the apparatus is mainly intended for blanching or pre-cooking peas, beans and the like, it may also be used for other purposes without altering the structural arrangements hereinbefore described. For example the apparatus may be used for cooling peas, beans and like granular products, in which case pre-cooled water would be fed into the tubular ring 12 instead of hot water or a steam/water mix, and the heat absorbed by the water from the product would then pass upwards by convection to the overflow, the heated water leaving the chamber being rapidly replaced by cold water supplied to the base from the recirculating tank or other source.

WHAT WE CLAIM IS:—

1. Apparatus for blanching, pre-cooking or otherwise treating peas comprising a water chamber into which the peas are fed, and subsequently extracted, two coaxially arranged perforated tubular members disposed within said chamber in such a way as to provide between them an annular space in which the peas are treated, and means for directing water outwardly from inside the inner tubular member through said annular space and into the outer part of the water chamber.

2. Apparatus according to Claim 1, wherein means are provided whereby said water is directed counter to the direction of the feed of the peas to the annular treatment space between said tubular members.

3. Apparatus according to Claim 1 or 2, wherein said inner perforated tubular member is provided with one or more perforated deflectors so arranged as to cause the peas to be thoroughly soaked with water as they pass from end to end of said annular treatment space.

4. Apparatus according to Claim 3, wherein said deflectors are arranged to surround said inner perforated tubular member, and are of frusto-conical shape.

5. Apparatus according to Claim 1 or 2, wherein the supply of water to said chamber is effected through a perforated tubular ring disposed within the lower end part of said inner tubular member.

6. Apparatus according to Claim 1, wherein the extraction of the peas is effected through a centrally arranged extraction pipe passing through said inner perforated tubular member, and terminating just above the lower end of said water chamber, means being provided for creating a partial vacuum in said extraction pipe whereby the peas are propelled through said extraction pipe into a discharge chute.

7. Apparatus according to any one of the preceding claims, wherein said water chamber is provided with an overflow for the water passing upwardly through the chamber, and with a collecting device for receiving split peas and skins discharged from the upper part of said chamber.

8. Apparatus according to Claim 7, wherein means are provided for recirculating the overflow water back to the means provided for heating the feed water supplied to the apparatus.

9. Apparatus for blanching, pre-cooking or otherwise treating peas, constructed,

arranged and operating substantially as herein described with reference to the accompanying drawings.

MARKS & CLERK.
Chartered Patent Agents,
Agents for the Applicants.

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Fig 1.

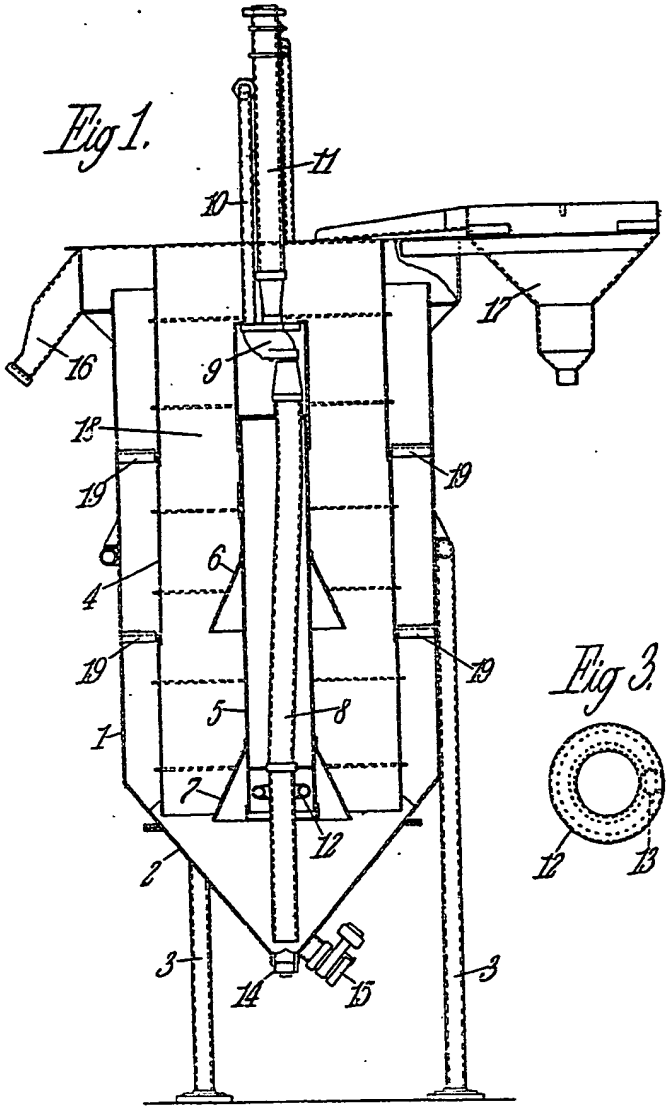

Fig 3.

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2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheets 1 & 2

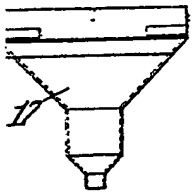


Fig 2.

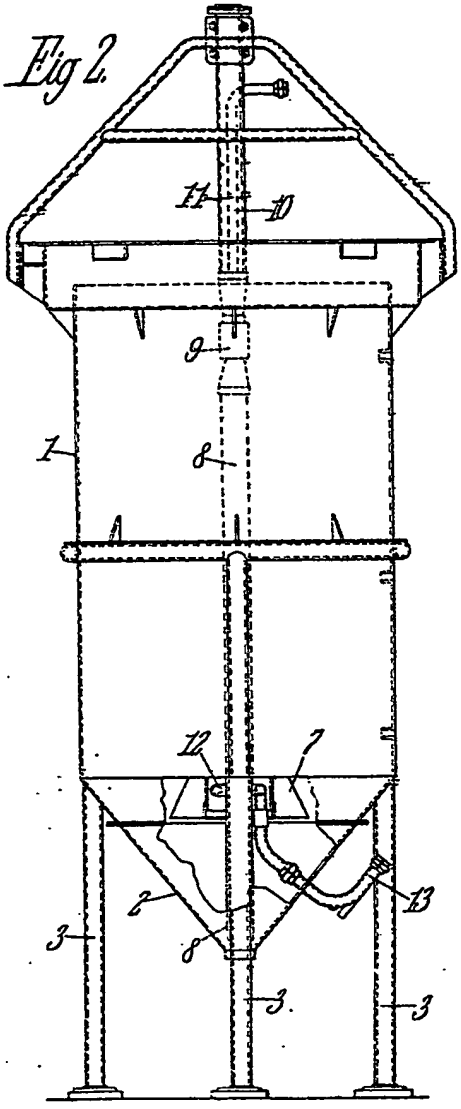
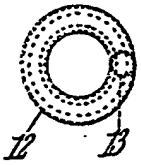


Fig 3.



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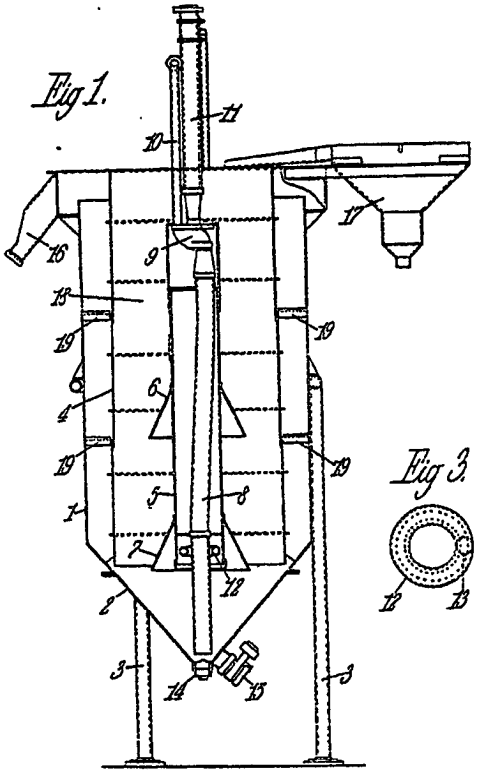

Fig 2.

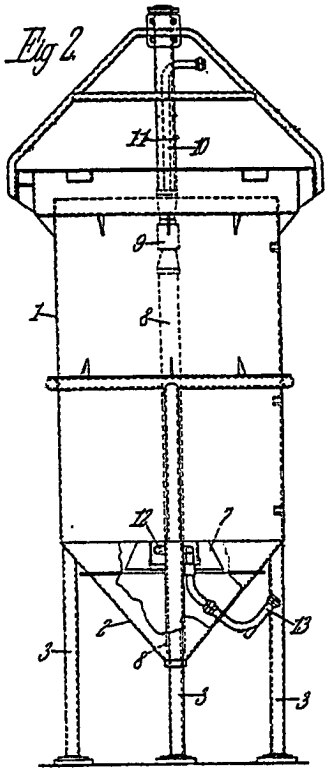

Fig 3.